



Department of Energy

ROCKY FLATS OFFICE
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JAN 04 1993

92-DOE-14696

Mr. Martin Hestmark
U.S. Environmental Protection Agency, Region VIII
ATTN: Rocky Flats Project Manager, 8HWM-RI
999 18th Street, Suite 500, 8WM-C
Denver, Colorado 80202-2405

Dear Mr. Hestmark:

This letter is in response to your October 1, 1992 letter concerning mitigation of the wetland in Operable Unit 1 (881 Hillside). We are proposing: (1) that the bottom of the wetland will be treated with bentonite or similar soil amendments to reduce the hydraulic conductivity of the substrate, as commonly recommended in wetland restoration practice; (2) the wetland **not** be planted completely with cattails, but rather allow natural establishment of wetland vegetation for a period of two years to allow establishment of a diverse mixture of species that are likely to survive; and (3) install a vertical riser in the upstream end of the drain pipe under the gravel road.

The enclosure explains our position with respect to these three items. If you have any questions, please contact Scott Grace of my staff at 966-7199.

Sincerely,

James K. Hartman
Assistant Manager
for Environmental Management

Enclosure

cc w/Enclosure:
A. Rampertaap, EM-453
J. Ciocco, EM-453
G. Kleeman, EPA
B. Miller, EPA
G. Baughman, CDH
J. Schieffelin, CDH
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cc w/o Enclosure:
M. Buddy, EG&G
C. Gee, EG&G
D. Flory, EG&G

A-DU01-000810

DOE Wetland Mitigation Position Statement on 881 Hillside French Drain Project

Introduction

This statement outlines the Department of Energy, Rocky Flats Office (DOE) position regarding wetland mitigation for the 881 Hillside French Drain Project (881-HFD). DOE understands the Environmental Protection Agency's (EPA) desire to have wetland mitigation for the 881-HFD located near the 881 hillside, but feels that EPA must understand that constructing a wetland, using the existing hydrologic regime, on a hill that has porous, gravelly substrate material in the vicinity of a french drain system constructed to collect and treat hazardous substances, presents problems that must be resolved if successful onsite wetland mitigation is to be achieved, without jeopardizing the mission of the Interim Measures/Interim Remedial Action (IM/IRA). Following is a discussion of concerns that have arisen with the initial wetland mitigation attempt, along with suggestions to alleviate the problems.

Purpose of 881 Hillside French Drain Project

The 881-HFD is part of an IM/IRA that is designed to minimize the release of hazardous substances that pose a potential long-term threat to the public health and environment. The french drain system is designed to intercept and treat contaminated alluvial ground water. Surface water coming from the south part of the Rocky Flats Plant (RFP), including the area around the 881 building, is supposed to follow surface drainages that transport the water over the french drain system to the South Interceptor Ditch (SID) and eventually into pond C-2, which is a currently permitted NPDES discharge point. The French Drain System was not designed or intended to collect and treat the volume of surface water coming from the surface drainage area around the 881 building. This surface water is uncontaminated, and treating it is an unnecessary and unjustifiable expense.

Concerns

Contamination of Surface Waters - The depressional wetland that was constructed at EPA's request to mitigate the loss of a previous wetland, has created a collection point for uncontaminated surface water from the south part of the RFP. The porous substrate in the bottom of the depressional wetland allows surface water that should flow directly into the SID to infiltrate, mix with potentially contaminated ground water, and be collected by the french drain. All of this water must be treated before being discharged back to the SID, where it would have gone directly if it had not been diverted by the wetland site into the groundwater. This situation is causing an unnecessary contamination of natural resources (surface water), and results in unnecessary increases in treatment costs with no environmental benefits.

Possible Overflow of French Drain - The additional water volume introduced into the french drain system through the depressional wetland threatens to overload the drain collection system to the point that it could overflow and cause untreated potentially contaminated water to be released, with potential flow directly into Woman Creek.

Recent experience has shown that even after heavy rains of 2"-2.5" in a 24 hour period, the depressional wetland held no water, and there was no evidence that water even temporarily covered the bottom of the depression. The surface water that flows into the depressional wetland is apparently quickly infiltrating through the porous substrate at the bottom of the depression.

Gravelly material was observed in the bottom of the depression during excavation, and the 881 hillside is known to have gravel layers ranging from 1.3 feet to 5.5 feet thick which were deposited at various depths in a downslope direction by slope wash erosion of the Rocky Flats Alluvium.

DOE Responsibilities - DOE has responsibilities to clean up existing contamination, prevent unnecessary contamination of natural resources, and avoid unnecessary costs. The depressional wetland that EPA requested to be constructed onsite in the porous material of the 881 hillside, above the French Drain System, is currently interfering with DOE's ability to comply with these responsibilities, and causing extensive unnecessary costs in additional water treatment.

Possible Failure of Mitigation Wetland - DOE is concerned that the depressional wetland will not function as a wetland in its present state. Successful wetland restoration or creation is dependent upon developing hydrologic conditions in the wetland that are sufficient to support wetland functions. Hydrologic conditions directly affect both physical and chemical factors such as the frequency and duration of substrate saturation, degree of substrate anoxia, water chemistry, and nutrient availability. These physical and chemical factors, in turn, affect the biotic components of the wetland ecosystem. Insufficient hydrologic conditions preclude the establishment of conditions necessary for a wetland to exist and function.

The combination of hydrologic conditions and substrate conditions in the existing depressional wetland on the 881 Hillside does not appear to be suitable for wetland restoration or creation. The hydraulic conductivity of the substrate in the area of the proposed wetland appears to be too high for the substrate to retain the available water long enough to saturate the substrate at a frequency and duration sufficient to support wetland functions.

Transplanting of Cat-tails - DOE is concerned about possible ramifications of EPA's request to transplant cat-tails into the wetland from potentially contaminated sites that have not been thoroughly characterized. DOE understands EPA's desire to have the wetland area revegetated, but feels that the problems associated with transplanting of cat-tails in this particular situation have not been adequately addressed. It could constitute an action requiring compliance with Floodplain/Wetlands Environmental Review Requirements (10 CFR Part 1022). DOE also understands that natural revegetation, particularly in a situation where there is an adjacent natural seed source, can be a viable alternative. Other areas of RFP are filled with extensive cat-tail stands that were never planted. Natural revegetation can result in a more diverse and stable system than could reasonably be established by artificial planting.

DOE Position

DOE feels that it is possible to mitigate the loss of the wetland at the 881 hillside without compromising its important responsibilities to contain existing contamination, avoid unnecessary contamination of natural resources, and avoid unnecessary increases in the cost of treating existing contamination. In order to fulfill these responsibilities, and comply with EPA's desire to have wetland mitigation constructed on the 881 hillside, DOE proposes the following actions.

Addition of Soil Amendments - The bottom of the existing depressional wetland will be treated with bentonite or similar soil amendments to reduce the hydraulic conductivity of the substrate, thereby reducing, but not completely eliminating the amount of surface water that infiltrates through the substrate and into the ground water. The addition of soil amendments is a commonly recommended practice in wetland restoration. In fact, it is considered a necessary practice if the substrate at the wetland restoration site is too porous for the existing hydrologic regime to support wetland conditions. The addition of soil amendments should allow the substrate

to be saturated at a frequency and duration sufficient to support wetland functions that are dependent upon the physical and chemical conditions that will only develop under prolonged saturation conditions. The wetland should still perform ground water recharge functions. Surface water should still infiltrate to the ground water, but at a greatly reduced rate. This should allow the wetland to function without unnecessarily contaminating large amounts of clean surface water, and without increasing treatment costs beyond what is necessary. It should also reduce the chances of the french drain system overflowing.

Installation of a Vertical Riser - A vertical riser will be installed on the upstream end of the drain pipe under the gravel road. This should allow water to fill the depression to a maximum depth of 4 1/2-5 feet, before it flows out through the top of the vertical riser and into the riprap channel on the downstream side of the gravel road. The deepest part of the depressional wetland should be permanently or semipermanently flooded. The perimeter area of the wetland should be periodically flooded. The water level in the depression should still fluctuate, due to loss through evaporation and infiltration, but the substrate should stay saturated for longer periods than it would under current conditions. The area that will function as a wetland will also be larger than it would be under current conditions.

Establishing Vegetation in Wetland - The increased depth in the central part of the wetland will likely preclude the establishment or survival of cat-tails, which are not able to tolerate sustained water levels of much more than one foot. Since water level fluctuation is dependent upon natural precipitation events, and water levels can't be predicted with certainty, DOE proposes to allow natural establishment of wetland vegetation for a period of two years. This should allow for establishment of a diverse mixture of species in the areas where the water levels are suitable for their survival. It should also allow time to monitor water levels to determine where any necessary planting should be done. If suitable wetland vegetation has not become established after the wetland has been in place through three growing seasons, the situation will be reevaluated to see what needs to be done to establish vegetation in areas that have not been semipermanently flooded to a depth of one foot or more, or have not been adequately vegetated through natural revegetation. DOE will provide EPA with quarterly photodocumentation of the progress of the vegetation in the wetland for a period of five years.

DOE agrees to plant willow cuttings, in two rows, on three foot centers around the downstream periphery of the wetland, where there is no existing vegetation. This will be done with the understanding that proper placement of these cuttings in areas where the hydrologic conditions are conducive to their survival is uncertain until the water levels can be monitored for an adequate period. Plantings may have to be repeated if the initial locations are too wet or too dry.